



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/771,569	01/30/2001	James P. Clarkin	P 00277116	1204

909 7590 05/19/2003

PILLSBURY WINTHROP, LLP  
P.O. BOX 10500  
MCLEAN, VA 22102

EXAMINER

TRAN, MY CHAU T

ART UNIT	PAPER NUMBER
1639	

DATE MAILED: 05/19/2003

10

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/771,569	CLARKIN ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	My-Chau T. Tran	1639	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1) Responsive to communication(s) filed on 10 March 2003.

2a) This action is **FINAL**.                    2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4) Claim(s) 1-41 is/are pending in the application.

4a) Of the above claim(s) 2,6,7,16,18,32 and 38-40 is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 1,3-5,8-15,17,19-31 and 33-36 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 08 May 2001 is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on \_\_\_\_\_ is: a) approved b) disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some \* c) None of:

1. Certified copies of the priority documents have been received.

2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.

3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.

4) Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.

5) Notice of Informal Patent Application (PTO-152)

6) Other: \_\_\_\_\_.

### **DETAILED ACTION**

1. Applicant's amendment filed 11/20/03 in Paper No. 7 is acknowledged and entered.

Claims 3-7 are amended by the amendment. Claims 38-41 are added by the amendment.

2. Claims 1-41 are pending.

#### ***Election/Restrictions***

3. Applicant's election of Group I (Claims 1, 4-5, and 8-27) in Paper No. 7 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

4. However because Claim 3 is amended to depend on Claim 1, Group III (Claims 3-4, 8-13, and 28-36) is rejoined with Group I. And the newly added Claims 38-41 is also joined with Group I. Therefore, Group I is Claims 1, 3-5, 8-36, and 38-41).

5. Claims 2, 6-7, and 37 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a **nonelected inventions**, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 7.

6. Applicant's election without traverse of species for Group I and Group III in Paper No. 9 is acknowledged. The species selection are as follows:

a. Species A (channel cross sectional area): 0.0001 mm<sup>2</sup> to 1mm<sup>2</sup>.

- b. Species B (channel length): 1 mm to 1 km
- c. Species C (substrate): glass
- d. Species D (exterior coating): polyimide
- e. Species E (interior coating): hydrophobic bonded phases
- f. Species H (endcap substrate): glass

7. It is noted that the species F (channel cross sectional area) and G (channel length) of Group III (that is now joined with Group I) is the same as species A and B of Group I. Therefore, the election of the single species A and the single species B is also an election of the single species F and the single species G, respectively.

Accordingly, the claims that read on the elected species include Claims 1, 3-5, 8-15, 17, 19-31, and 33-36.

8. Claims 16, 18, 32, and 38-40 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a **nonelected species**, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 9.

***Priority***

9. If applicant desires priority under 35 U.S.C. 119(e) based upon a previously filed application, specific reference to the earlier filed application must be made in the instant application. For benefit claims under 35 U.S.C. 120, 121 or 365(c), the reference must include the relationship (i.e., continuation, divisional, or continuation-in-part) of the applications. This should appear as ***the first sentence of the specification following the title***, preferably as a

separate paragraph unless it appears in an application data sheet. The status of nonprovisional parent application(s) (whether patented or abandoned) should also be included. If a parent application has become a patent, the expression "now Patent No. \_\_\_\_\_" should follow the filing date of the parent application. If a parent application has become abandoned, the expression "now abandoned" should follow the filing date of the parent application.

If the application is a utility or plant application filed under 35 U.S.C. 111(a) on or after November 29, 2000, the specific reference must be submitted during the pendency of the application and within the later of four months from the actual filing date of the application or sixteen months from the filing date of the prior application. If the application is a utility or plant application which entered the national stage from an international application filed on or after November 29, 2000, after compliance with 35 U.S.C. 371, the specific reference must be submitted during the pendency of the application and within the later of four months from the date on which the national stage commenced under 35 U.S.C. 371(b) or (f) or sixteen months from the filing date of the prior application. See 37 CFR 1.78(a)(2)(ii) and (a)(5)(ii). This time period is not extendable and a failure to submit the reference required by 35 U.S.C. 119(e) and/or 120, where applicable, within this time period is considered a waiver of any benefit of such prior application(s) under 35 U.S.C. 119(e), 120, 121 and 365(c). A priority claim filed after the required time period may be accepted if it is accompanied by a grantable petition to accept an unintentionally delayed claim for priority under 35 U.S.C. 119(e), 120, 121 and 365(c). The petition must be accompanied by (1) the reference required by 35 U.S.C. 120 or 119(e) and 37 CFR 1.78(a)(2) or (a)(5) to the prior application (unless previously submitted), (2) a surcharge under 37 CFR 1.17(t), and (3) a statement that the entire delay between the date the claim was

due under 37 CFR 1.78(a)(2) or (a)(5) and the date the claim was filed was unintentional. The Director may require additional information where there is a question whether the delay was unintentional. The petition should be addressed to: Mail Stop Petition, Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

10. Claims 1, 3-5, 8-15, 17, 19-31, and 33-36 are treated on the merit in this Office Action.

***Claim Rejections - 35 USC § 112***

11. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

12. Claims 1, 3-5, 8-15, 17, 19-31, and 33-36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- a. The limitation of “the drawn channels extending in a direction parallel to the length, and inlets and outlets in cooperating relation with the drawn channels’ of Claim 1 is vague and indefinite. It is unclear as to which channels it is referring to.
- b. It is unclear the relationship of the “drawn substrate” and “endcap substrate” or “drawn channel” and “endcap channel” with regard to Claim 28.
- c. The term “substantially constant” of claims 26-27, and 36 is a relative term, which renders the claim indefinite. The term “substantially constant” is not defined by the claim, the specification does not provide a standard for ascertaining the requisite

degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

***Claim Rejections - 35 USC § 102***

13. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

14. Claims 1, 3-4, 8-10, 14-15, 19, 21, 26, 28-29, 31, and 34-36 are rejected under 35 U.S.C. 102(b) as being anticipated by Anderson et al. (US Patent 5,922,591).

*The instant claimed device comprise of a substrate having two channels formed therein.*

*The channels comprise of inlets, outlets, spaced apart, and are in a parallel direction. The device further comprise of at least one “endcap” channel (It is interpreted as the connection between two channel) being in fluid communication with at least one channel. The “endcap” substrate is interpreted as the same substrate of the device.*

Anderson et al. disclose a microfluidic device comprises various reaction chambers and fluid passages (channels), which is manufactured onto the surface of the substrate (col. 17, lines 59-61; fig. 12c; col. 19, lines 29-33). The fluid channels have smaller dimensions relative to the chambers and range about 10  $\mu\text{m}$  wide and 1  $\mu\text{m}$  deep (e.g. a cross sectional area of about 0.1mm<sup>2</sup>) (col. 18, lines 30-40) (referring to claim 4). The body of the device (substrate) comprise of glass (referring to claim 15 and 31). The surfaces of the channel may be made more hydrophobic by coating the surface (col. 20, lines 33-40) (referring to claim 19). The channel

comprise of inlets and outlets valves (col. 30, lines 41-50). In figure 12c, the device comprises a plurality of channels, wherein the main channel is ref. # 1252 (col. 30, lines 26-31). The various channels connecting the chambers to the main channel are in a parallel direction. The channels comprise of a “bend” (“endcap” channel) that connect two channels together and are spaced apart (fig. 12c). Therefore, the device of Anderson et al. anticipates the presently claimed invention.

15. Claims 1, and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Oh (US Patent 5,904,824).

*The instant claimed device comprise of a substrate having two channels formed therein. The channels comprise of inlets, outlets, and are in a parallel direction. The substrate further comprise of an electrical conductor.*

Oh disclose a microfluidic electrophoresis device comprise of glass layer (substrate), electrophoretic channels, and electrodes (col. 6, lines 24-37). From fig. 1, the channels (ref. #18) are in parallel directions. The channels comprise of inlets and outlets through which the fluid flows. Therefore, the device of Oh anticipates the presently claimed inventions.

16. Claims 1, 3, 11, and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Sepaniak et al. (US Patent 5,176,881).

*The instant claimed device comprise of a substrate having two channels formed therein. The channels comprise of inlets, outlets, spaced apart, and are in a parallel direction. The device further comprise of at least one “endcap” channel (It is interpreted as the connection*

*between two channel) being in fluid communication with at least one channel. The “endcap” substrate is interpreted as the same substrate of the device.*

Sepaniak disclose a fiber optic device comprises a probe (substrate) (col. 5, lines 6-37; fig. 2). The probe includes conduits (channels), wherein the reagents flow, and an optical fiber (col. 5, lines 22-37). The conduits and optical fibers are gathered together into a parallel bundle (col. 5, lines 43-48). The ends of certain conduits comprise of fritted closures (fig. 4; ref. #41) (“endcap” channel). Therefore, the device of Sepaniak anticipates the presently claimed inventions.

17. Claims 1, 3-5, 8-10, 14-15, 17, 20-31, and 33-36 are rejected under 35 U.S.C. 102(b) as being anticipated by Beattie (US Patent 5,843,767).

*The instant claimed device comprise of a substrate having two channels formed therein. The channels comprise of inlets, outlets, spaced apart, and are in a parallel direction. The device further comprise of at least one “endcap” channel (It is interpreted as the connection between two channel) being in fluid communication with at least one channel. The “endcap” substrate is interpreted as the same substrate of the device.*

Beattie disclose a device comprise of a nanochannel glass array (col. 9, lines 60-67). The array comprise of inserting a cylindrical glass rod into an inert glass tube (col. 9, lines 62-67) (channel in parallel direction). The pair is drawn under a vacuum to reduce the overall cross-sectional area (col. 9, line 67 to col. 10, line 1). The length of the channels is about 0.1 to 1.0 mm with a diameter of 300 nm ( $0.07 \text{ mm}^2$ ) and a center-to-center spacing of about 750 nm (col. 10, lines 10-31). Therefore, the device of Beattie anticipates the presently claimed inventions.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to My-Chau T. Tran whose telephone number is 703-305-6999. The examiner is on ***Increased Flex Schedule*** and can normally be reached on Monday: 8:00-2:30; Tuesday-Thursday: 7:30-5:00; Friday: 8:00-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew J. Wang can be reached on 703-306-3217. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9306 for regular communications and 703-872-9307 for After Final communications.

*Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1123.*

mct  
May 16, 2003

  
PADMASHRI PONNALURI  
PRIMARY EXAMINER